

Synergies Between Chemicals and Waste Management – Sri Lankan Perspective.

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ABSTRACT

Chemicals & hazardous waste [HW] management are interrelated in various aspects and also the majority of hazardous waste is chemicals based. A project was carried out by Central Environmental Authority [CEA] with the help of national level stakeholder organizations including govt. sector, private sector, NGOs, trade unions from Feb. 2001 to April 2003, which addressed the development of a National Action Plan [NAP] for Sound Management of Chemicals in Sri Lanka. This project was funded by the United Nations Institute of Training & Research [UNITAR] that funded similar projects in Ecuador & Senegal. The NAP made comprises 7 key sectors: Industrial chemicals management, Pesticide management, Hazard communication, Financial resources mobilization, Interministerial information exchange, Interministerial coordination & National chemical profile updating.

Together with the NAP prepared & the current status of the HW generation, treatment & disposal in Sri Lanka [SL], this paper discuss the possible synergies between chemicals management & HW management giving emphasis to institutional issues such as coordination & information exchange & also on integrated approach for importation of chemicals and waste

Based on the chemical life cycle: importation, storage, transport, use, recycling, & disposal: synergies were identified. Though SL uses a considerable amounts of industrial chemicals, pesticides, consumer chemicals & domestic chemicals at present, no proper overall strategy or a comprehensive legislation in operation for management of chemicals. Sri Lanka generates around 57,000.00 metric tones of HW per year [2003 data], but no proper management except safe storage in few cases. Regulation for the management of HW available since 1996 under the National Environmental Act [NEA], but no implementation mainly since any facilities to treat & dispose HW.

This paper attempt to identify synergy programmes with the responsible organizations with possible approaches. In analyzing the possibilities for synergy actions, this paper studied proposed 12 major & 7 minor activities in the NAP. Synergies are possible in the areas of improvement of infrastructure for chemical & HW management, analysis & monitoring of chemicals & HW, awareness creation on chemicals & HW management, interministerial information exchange for chemicals & HW management, interministerial coordination for chemicals & HW management. These activities require significant resources.

And also the synergies are possible in the areas of trainings in the field of chemicals & HW management, preparation of guidelines/rules for transportation of chemicals & HW, financial resources mobilization for chemicals & HW management, production of visual aids egg. Videos. These activities require fewer resources comparatively.

In the country context, Sri Lanka faces several obstacles that interferes the synergy approaches. This includes: lack of awareness, fragmented approaches & short sighted political objectives, competition for funds at national & international level, absence of proper legislations & regulations/plans, weaknesses of policy development etc.

Being a developing country Sri Lanka should consider the synergy actions for management chemicals & HW. It will have various benefits over fragmented approaches. Expenditure reduction, minimization of overlapping/duplication, multi-stakeholder participation, information sharing and coordination, national integration are among benefits.

1. Background

Since the dawn of the 20th century and in particular after the World War II, chemicals have been used in increasing quantities in agriculture, food and industry including in public health in Sri Lanka. Most chemicals currently used are synthetic chemical substances that are highly effective in trace quantities. They disrupt or irreversibly change essential metabolic functions in plant and animal tissues, besides causing environmental pollution.

However, as at present there is no proper overall management strategy in operation for the use of chemicals in Sri Lanka (SL). Nevertheless, there are certain enactments and regulatory Acts such as the Control of Pesticides Act, Food Control Act, Industrial Acts including Labor and Occupational Hygiene and Health regulations as detailed in the Situation Analysis (SA) Reports prepared in the action plan development phase of UNITAR/CEA project. The deficiencies and/ or gaps have been identified as Core Problem Statements (CPS).

In addition, SL has to comply with its commitments to International Conventions governing the use of chemicals such as the Rio Convention, Montreal Protocol, Basel Convention, Stockholm Convention, Rotterdam Convention and ILO etc.

Liberalization of the economic policy in the late seventies has had a major effect on the industrial sector of Sri Lanka. Ever since the open economy policy was implemented, the industrial sector has undergone a major metamorphosis and has emerged as the backbone of the national economy. From the USAEP sponsored industrial survey statistics it can be estimated that about 1400 industries registered with the Ministry of Industry and 750 industries registered with the BOI are using various types of chemicals in their processes.

Out of the major manufacturing industries the Textile, Leather & Apparel sector and the Chemical based sector feature prominently in terms of investment and employment. In the year 2000, this sector has contributed 13% to the overall growth of the private sector industries. The importance of the chemical industrial sector in Sri Lanka is signified by the statistics shown below that have been extracted from the 'Review of Activities (Jan-Dec, 2000)' published by the Ministry of Industrial Development.

Sector: Chemical, Petroleum, Rubber and Plastic Products

No of industries	- 389 (21.7%)
<i>Employment</i>	- 50,967 (16.4%)
Total Investment	- Rs.28.93 million (25.2%)

As a result of the growth of the chemical based manufacturing sector, an increasing variety and quantity of chemicals are being imported and used in various processes in the

country. Especially, with the institutioning of the Board of Investment (BOI) the inflow of chemicals has increased dramatically. In fact, not only the industrial sector but also the medical, research, academic, service sectors and households use chemicals widely for different purposes. As at present it is estimated that close to a thousands varieties of chemicals are brought into the country but there is no mechanism that enables any regulatory body to trace the journey of chemicals from the cradle to grave. This unregulated and unmonitored usage of chemicals has become a serious concern from the point of view of the society, as exposure to chemical pollution has been manifested in a number of adverse effects. It is widely believed that improper usage of chemicals is possibly one reason for the increase of incidences of cancer in the country. According to medical sources the rate of increase of cancer over the past 20 years is about 3.8% although it has not been statistically co-related to chemical pollution. However, there is evidence to show that unwise usage of fertilizer has resulted in the increase of nitrate and nitrite content in ground water to 30ppm that could be reliably co-related with the increase of cancer among farming communities such as in the Kalpitiya area

Historically, the socio-economy of Sri Lanka has been based on agriculture. Despite recent shifts towards an industrial economy, the percentage share of GNP from agriculture in the year 1999 was 16.9. Along with the global trend, the use of chemicals in agriculture has been steadily growing in Sri Lanka. In the year 1999, the annual expenditure on import of agro-pesticides in Sri Lanka was US\$ 18.6 million. Considering the high potential for adverse health and environmental effects associated with the use of pesticides, the government of Sri Lanka formulated a comprehensive and exclusive legal framework in 1980 for the purpose of regulating the activities of pesticides (Control of Pesticides Act No. 33 of 1980).

It is therefore now recognized that there is a need for building national capabilities and capacities for the “Sound Management of Chemicals in Sri Lanka” as an important aspect of sustainable development.

2.Objectives

There were 2 main objectives of this study viz:

1. Development of separate action plans for the seven different aspects [Industrial Chemical Management, Strengthening of Pesticide Management Capacity, Hazard Communication, Financial Resources Mobilization, Interministerial Information Exchange, Interministerial Co-ordination and Updating of National Chemical Profile] for sound management of chemicals in Sri Lanka.
2. Integration of these 7 action plans and preparation of common action plan for implementation for the sound management of chemicals in Sri Lanka

3.Method

Subsequent to Central Environmental Authority's (CEA) of Sri Lanka (SL) application to the United Nations Institute for Training And Research (UNITAR) for developing an "Integrated National Programme for the Sound Management of Chemicals in Sri Lanka" in line with Chapter 19 of Agenda 21 of United Nations (UN), CEA and UNITAR entered into an agreement in April 2001. UNITAR provided the necessary technical and financial (US\$ 71,500) assistance and guidelines for developing the Action Plans for implementation in the 7 key sectors: Industrial Chemicals management; Strengthening Pesticides Management Capacity; Hazard Communication; Financial Resources Mobilization Strategy; Inter- ministerial Information Exchange; Inter-ministerial Co-ordination; and Up-dating of National Chemical Profile, during the period February 2001 – April 2003.

CEA considered, and applied to suit its needs, the UNITAR approach and management strategy for developing the National Action Plan comprising aforesaid 7 Key Sectors on the Sound Management of Chemicals in SL. Under the guidance of UNITAR, CEA set-up 7 sub-committees representing various stakeholder organizations to develop 7 Action Plans. The Deputy Director General (DDG) of the CEA acted as the National Project Coordinator. The Hazardous Waste Management Unit of the CEA undertook the overall management of the project. According to UNITAR approach an important initial Phase is the development of the SA Reports well within a given timeframe. The CEA and the 7 Sub-Committees with a view to expediting this process, obtained the services of external Consultants to develop the SA reports.

The approaches taken in general in developing the SA Reports have been as follows:

- Presentation of findings, observations and data on specific subjects on sectoral basis;
- Analysis of findings with respect to health, environmental impacts and socio – economic aspects to highlight the weaknesses;
- Identification of areas to be improved, ranking them according to priority;
- Identification of “ Core Problem Statements”; and Suggestions on recommendations for action where necessary on prioritized basis

A total of 3 national workshops and series of meetings were held by the 7 Sub-Committees *during* the above mentioned project period to achieve the compilation of the Final National Report (FNR).

4. Core Problems Identified

4.1 Core problems identified in the Industrial Chemical sector.

4.1.1. Import of Industrial Chemicals

- Unregulated inflow of industrial chemicals to the country;
- Conflict between legal requirements and trade facilitation at the point of entry of Chemicals to the county;
- Emphasis on tax revenue collection superseding the need to verify the authenticity and standards of industrial chemicals at the point of entry of chemicals to the county;
- Lack of necessary legal and management instruments to regulate the number and Quantity of chemicals imported other than the items under license control;
- Lack of awareness among the decision makers (politicians & bureaucrats); and
- Lack of adequate financial, human and technological resources of the authorities Responsible at the point of entry of chemicals to the country.

4.1.2. Storage of Industrial Chemicals

- Improper procedures followed in storing industrial chemicals due to insufficient space and inadequate technology;
- Lack of internal/external monitoring mechanisms including lack of regulations;
- Low level of awareness and understanding on the importance of adopting the right technologies;
- Financial constraints and lack of incentives by the government to the private sector in the provision of storage facilities; and
- Lack of adequately trained staff resulting from the absence of a proper human resource development policy.

4.1.3. Transport and Handling of Industrial Chemicals

- Lack of policies and regulations governing transportation standards for industrial Chemicals;
- Accidental spillage during transport and handling;
- Transportation of chemicals in un - specialized and unsecured vehicles due to high cost of investment;
- High cost of investment;
- Lack of monitoring of vehicle standards; and
- Lack of understanding of the relevant decision makers.

4.1.4 Production and Usage of Industrial Chemicals

- Unsafe work practices during production and usage of chemicals;
- Lack of awareness/training due to the absence of a sound human resource development policy;
- Lack of supervision;
- Lack of communication & information sharing between the management and the workers;
- Lack of adequately trained workforce including poor housekeeping and monitoring of standards;
- Use of age-old/ incorrect technologies or sub-standard chemicals;
- Low awareness among the industrialists;
- Avoidance of bureaucratic red tape which hinders proper safety procedures; and
- Poor enforcement of relevant legislation (procedures, occupational safety).

4.1.5. Disposal of Industrial Chemicals

- Lack of comprehensive policy and legislation on disposal of rejected industrial chemicals (resulting in the improper reuse of rejected chemicals for alternate purposes);
- Lack of information on treatment technologies and disposal methods;
- Inadequate incentives for the industries to implement sound waste treatment and disposal interventions;
- Lack of appropriate legislation and monitoring;
- Low awareness among the government officers, industrialists and the public; and
- High cost of treatment technologies.

4.2 Core problems identified in strengthening or pesticide management capacity

4.2.1. Farmer Related Problems

- Farmers seek advice on pesticide use largely from dealers, who may not provide adequate information regarding proper application procedures and safeguards;
- Farmer's knowledge on components of Cost of Production (COP) is poor (pesticide component);
- Pesticide costs are high and increasing;
- High risks in transporting and unsatisfactory handling during transportation from dealer to household;

- Poor knowledge on Integrated Pest Management (IPM) practices and Identification of beneficial pests;
- Poor maintenance of spray equipment;
- Poor knowledge on use of safety gear and color banding;
- Use of contaminated water in dissolving pesticides;
- Unaware of remedial measures in cases of chronic, long term and cumulative pesticide poisoning;
- Lack of properly designed training modules and training materials;
- Unaware of proper disposal methods for pollution control of the environment;
- Use of used containers for domestic purposes;
- Non adherence to post harvest safety periods;
- Misuse of pesticides for extending shelf life and value addition;
- Absence of Quality Assurance (QA) of produce, centrally, regionally or locally including central markets;
- Extensive wastage of perishable agricultural produce;
- Long hours of spraying over large extents of crop land;
- Unaware of health hazards due to pesticide contamination;
- Pollution of waterways, reservoirs and ground water;
- Soil contamination due to heavy use of pesticides;
- Pollution of inland fresh water bodies and marine including coastal resources; and
- Absence of QA system to ascertain pesticide residues in poultry, aquatic and livestock products.

4.2.2 Dealer Related Problems

- System of dealer training in current use of pesticides is poor;
- Uncertified traders dealing in pesticides;
- Use of transport agents, who may not be trained in the safe transport of pesticides;
- Absence of hazard communication;
- Transport crews unaware of risks and hazards;
- Check on health not undertaken;
- Lack of adequate safety precautions;
- Non availability of MSDS with the majority of dealers;
- Sales made to underage customers;
- Majority of farmers seeking advise from dealers on pesticide use; and
- Sale of out dated pesticides.

4.2.3 Importers and Formulators/Suppliers Related Problems

- High cost of pesticides;
- SLCPA membership is limited;
- Importers directly liaise with R&D institutions on product testing at individual importer /supplier level;
- Use of SLPA Kochchikade and Peliyagoda warehouses for storing nine different types of dangerous cargo including pesticides, which come under the “poison” category;
- Large stocks of unidentified, outdated and damaged dangerous cargo possibly including pesticides lying in the warehouses for extended periods;
- Absence of duplicates of confidential and technical documentation as security against natural or man made disasters at RoP office e.g. fire, floods, theft, hacking etc;
- Most of the large scale importers/suppliers /formulators are located in the Colombo district;
- Lack of adequate treatment facilities for wastewater and solid waste;
- Storage of large stocks of outdated, banned and damaged pesticides in warehouses;
- Inadequate facilities for QA;
- Safety gear unused in certain operations though available;
- Use of transporting and forwarding agents for clearing and transporting consignments from SLPA warehouses;
- Absence of hazard communication e.g. specifying mode of transport, warning signs, times and routes of transport; and
- Lack of co-coordinated training on pesticides and residue related issues.

4.2.4 Research, Development and Service Providers Related Problems

- Except in the recently established ITI analytical facility, none of the R&D institutions or service providers have fully fledged laboratory facilities for pesticides and residue analyses;
- IPM issues have not been adequately addressed in R&D programmes and /or in recommendations;
- High cost of analytical services for pesticide residues;
- Restrictions imposed by bio-produce auditing and certifying Bodies;
- Pollution control in disposal of pesticides by farmers, other users And themselves not addressed by R&D institutions; and
- Failure to obtain the services of SAARC and neighbouring countries to collect, transport and dispose of pesticide waste either locally or abroad.

4.2.5 Education and Training Related Problems

- Absence of a National Policy on pesticide use in the country's Educational programmes;
- Lack of training for academic and teaching staff; and
- Absence of an apex body at national level to co-ordinate R&D And education and training in pesticides and residues.

4.2.6 Regulatory Functions and Legal Instruments Related Problems

- Relevant sections on pesticides and residues in the various acts and ordinances have not been revised concurrently in the recent past for updating and streamlining legislation;
- Lack of funding; and
- Absence of in-house legal support.

4.2.7 Food, Public Health and Industry Related Problems

- Absence of a national policy on pesticides and residues;
- Inadequate analytical facilities for pesticides and residue analysis in food and beverages at national level;
- Recently established ITI analytical facility is capable of carrying out necessary tests;
- Laws and regulations governing the food and beverage sectors are not properly enforced;
- Absence of a national policy on imports of GM foods;
- Hazard communication in general is poor;
- Limited state resources in controlling vectors of contagious / viral diseases;
- Heavy usage of mosquito coils (~1 million/day);
- Limited private sector establishments engaged in pest control In the non agricultural sector; and
- Lack of monitoring of pesticide use in industrial production or consumer products.

4.2.8 Health and Safety Related Problems

- Lack of infrastructure and trained medical personnel mostly in sub – urban areas;
- Current medical treatment protocols do not adequately address post Organo Phosphates (OP) poisoning issues;

- Recent advances in medical sciences not transferred through current educational system;
- Lack of adequate rehabilitating centres for cases of poisoning;
- Absence of national policy on safety issues on pesticides and residues;
- Safety issues on pesticide use not adequately covered in print And electronic media; and
- Non-availability of appropriate safety gear for some operations under conditions of use in tropical countries.

4.3 Problems identified in the Chemical Hazard Communication

4.3.1 Industrial Production Sector

- Absence of a proper classification and definition of hazardous chemicals in Sri Lanka;
- Absence of a proper training system for chemical hazard communication in the industrial sector.
- Only accidents resulting in death or incapacitation for more than 3 days are reported to the Division of Industrial Safety, and these accidents are not classified into types (e.g. chemical related);
- Although there are around 500 related NGOs in Sri Lanka, none of them are directly involved in chemical hazard communication;
- There are no industrial associations dealing with chemical hazard communication; and
- There is a lack of research work on chemical hazard communication in the industrial production sector (although there is work on laboratory safety).

4.3.2 Agriculture Sector Related Problems

- Lack of proper recording and monitoring system regarding incidents of agro/farm chemical use;
- The limitations and weaknesses in detecting chemical hazard injuries at farm level hamper communication on possible risks of chemical use;
- Lack of proper protective equipment; and
- Lack of systematic training programs on first aid for pesticide poisoning

4.3.3 Consumer Sector Related Problems

- Label instructions are not clear and there is no proper national policy in existence;
- The quality of labels (packaging material) is very high, especially in foreign products as most of the materials are printed through latest digital technology. All most all the

labels of imported consumer products are digital creations, while local consumer products still use free hand drawn illustrations;

- Unlike pesticide labels, the consumer sector products require highly comprehensive markets. Therefore most of the consumer design theories of package designing are used to improve the quality of presentation. (**Fig. 4.1 - REFILL KITNEON**). However, in some local products, no design theories were utilized and graphic elements are placed arbitrarily in the panel;
- Most of the labels (packaging material) are designed in such a way that users can identify the particular brand at a single glance. Graphic elements, colour combination, illustrations, lettering etc. are unique to the brand;
- Prominence given to highlight the trade name. Usually trade names are created rather than using default lettering of computer software. Majority are hand drawn, unique font style to maintain the identity of the brand. In most of the labels brand names are written in English lettering to maintain the identity of the product;
- In most of the packages, simplicity, balance and proximity, are seen only in the front panel where the trade name is highlighted. Usually graphic elements and illustrations unique to the product are presented in this panel;
- In most of the cases no proper attention has been given to the layout of panels, which present instructions for use, precautionary instructions, first-aid etc. More often precautionary instructions won't stand out from the rest of the text due to arbitrary placement in the layout. Furthermore, no graphic strategies are used to highlight these important instructions. Therefore it is difficult to scan and read these instructions in case of accidents;
- In majority of household pesticides (mosquito coil boxes) the '**POISON**' symbol or word are not printed on the main panel/front panel. In almost all consumer products precautionary statements (such as inflammable) are hidden within the normal text with letter height and colour similar to rest of the text;
- In some products (oil, battery water, household detergents) no health and safety instructions are given. Accidents were reported even in using hair dyes and for such products no health and safety instructions are given. However in almost all aerosol products, necessary safety instructions are given. Chemical hazard pictograms are hardly ever found in consumer products. In some labels, international pictograms are used and majority are not comprehensible for an ordinary customer; and
- Language used for safety instructions, directions for use and other information in various containers vary with the product. Most probably the languages were selected after considering household products. The size of the lettering is very small (lower than 6 points) in most of the labels and/or containers.

4.3.4 Transport Sector Related Problems

- Although UN hazard labels are used up to the port, majority of inland transportation of chemical substances are done without these labels; and
- No proper comprehensibility studies have been carried out.

4.4 Problems identified in the Financial Resources Mobilization

Core Problems have been identified in the following key areas

- Determination of priorities in relation to national policy formulation;
- Institutions responsible for chemical management and decision making process;
- Overview of chemical related finance resource requirements in Sri Lanka;
- Internal resource allocation; and
- External funding for sound chemical management.

4.5 Problems identified in Interministerial Information Exchange

Core Problems have been identified in the following key areas

- No information unit in place for inter-ministerial coordination i.e. lack of a formal set up for gathering and disseminating information;
- Lack of accredited data bases;
- Lack of infrastructure;
- Inadequate financial resources for communication facilities;
- Inadequate media support;
- Poor awareness among those concerned parties;
- Lack of adequate legal instruments and regulations for standards; and
- Postal delays.

4.6 Problems identified in Interministerial Coordination

Core Problems have been identified in the following key areas (*Annex 10*):

- Legal Instruments and non – regulatory mechanisms for monitoring of chemicals;
- Ministries/ Institutions managing chemicals;
- Role of Non Governmental Organizations (NGOs) and volunteer groups in national efforts in managing chemicals; and
- Inter – ministerial co – ordination mechanisms.

4.7 NATIONAL CHEMICAL PROFILE

The currently available National Chemical Profile (NCP) has been compiled in 1997 for the CEA as per the guidelines of the World Health Organization (WHO) in the form of a series of Tables.

At the moment there is no government agency assigned for continuous up–dating / up–grading of NCP in Sri Lanka in relation to key issues such as (*Annex 11*):

- Chemical production, imports, export and use;
- Legal instruments and non – regulatory mechanisms for managing chemicals;
- Ministries, agencies and other institutes responsible for managing chemicals;
- Relevant activities of industry, public interest groups and the R & D sector;
- Inter – ministerial committees and co-coordinating mechanisms;
- Management Information Systems (MIS) and net working;
- Technical infrastructure;
- International linkages;
- Awareness / understanding of workers and the public; and
- Resource availability and mobilization.

Also there is lack of co-ordination among various chemical users and there is no information exchange mechanism among various users in a co-coordinated manner.

5.Results – Main Goals Identified

Following main goals were identified in implementing a national programme for sound management of chemicals in Sri Lanka.

1. Develop and Implement an effective national industrial chemical management programme within 5 years.
2. An effective pesticide safety programme developed and Implemented to reduce the incidence of pesticide (including residues) related health problems by 20% in 5 years; and
3. Improved the capacity of farmers to practice sound integrated crop management (ICM) strategies to reduce usage of pesticides by 15% and consequent minimization of their residues in 5 years.
4. Develop and implement an effective chemical hazard communication action plan in collaboration with all relevant stakeholders in order to reduce the number of chemical incidents and accidents in all sectors, and improve their appropriate and safe use, over a period of 5 years.
5. To identify the most suitable external sources of funding and procedures for implementing the sound management of Chemicals;
6. To identify the current mechanism of mobilizing internal government funds and continue to improve such procedures; and
7. To analyze the potential contribution as private sector, NGOs, CBOs and other stakeholders for sound management of chemicals.

The absence of a proper information exchange mechanism at inter – ministerial level led to the development of a ToR for establishing a National Chemical Information centre (NCIC) at CEA.

The absence of an inter – ministerial co – ordination committee at national level to deal with all issues related to Integrated National Programme on Sound Management of Chemicals led to the development of ToR for establishment of the national inter – ministerial co –ordinating committee.

6.Main Activities Proposed Where Synergies Between Chemicals and Waste Management

No	Description of Activity
1	<i>Upgrade Capacity of ITI and Other selected facilities and undertake systematic monitoring of chemical residues</i>
2	<i>Establish systems and upgrade capacity of relevant organizations for effective monitoring of industrial chemicals through their life cycle</i>
3	<i>Conduct of a Island wide hazardous waste survey</i>
4	<i>Improve infrastructure facilities and analytical capabilities for regulating pesticides and their residues including transfer of technologies, to minimize associated health effects in all related sectors</i>
5	<i>Strengthen and improve the primary and secondary health care facilities including transport and communication for immediate management of pesticides related health problems</i>
6	<i>Introduce properly designed training modules on ICM [Integrated Crop Management] strategies in all aspects of pesticides and residues and continuous training</i>
7	<i>Awareness programmes for chemical users such as farmers, workers, dealers, chemical companies, NGOs, private & govt. officials</i>
8	<i>Engage current 5000 strong school environmental pioneer brigades as communicating agents on chemical hazard communication</i>
9	<i>Improve Safety data Sheets for local use, and Sri Lanka to obtain membership in the UNECOSOC sub – committees on the GHS and transport of dangerous goods</i>
10	<i>Development and operation of a strategy for financial resources mobilization on sound management of chemicals in Sri Lanka</i>
11	<i>Adoption of an Inter ministerial information exchange charter and establishment of a NCIC including up grading/ up dating of the National Chemical profile in Sri Lanka</i>
12	<i>Establish and Function an Inter ministerial Co–ordination Committee at national level for the sound management of chemical in Sri Lanka</i>

13	<i>Establish the PMU at CEA and manage the 5 years long project as per the prioritized activities including monitoring, evaluation and reporting</i>
14	<i>Develop a comprehensive new law for industrial chemical management</i>
15	<i>Making necessary improvements to the existing legal provisions and institutional setup of ROP</i>
16	<i>Improve communication linkages and facilities on pesticide related health problems</i>
17	<i>Conducting regular training programmes on pesticide related issues for the health sector</i>
18	<i>Review, improve and implement the guidelines on transportation of hazardous chemicals</i>
19	<i>Production of videos on chemical hazard communication to ensure broader awareness</i>
20	<i>Establishment of a mechanism and to conduct surveys on regular basis regarding chemical hazards at the community level as a tool to determine success of awareness creating efforts</i>

Note:

1 to 13 – Activities Requiring Significant Resources [ARSR]

14 to 20- Activities Requiring Fewer Resources [ARFR]

These activities are proposed to be implemented by the Project Management Unit [PMU] to be set up at the Central Environmental Authority at an estimated cost of LKR 793.15 million.

7.Expected Outputs If Implemented

- I. Island wide Hazardous Waste report*
- II. Upgraded CEA laboratory and ITI laboratory*
- III. Training Modules for chemical management*
- IV. Improved safety data sheets for chemical management*
- V. Financial Resources Mobilization Strategy for chemical management*
- VI. Interministerial Information Exchange Mechanism [Charter] for chemical management*
- VII. National Chemical Information Centre [NCIC] established at CEA*
- VIII. Interministerial Coordination Mechanism for chemical management*
- IX. Project Management Unit [PMU] at CEA*
- X. Legislation for chemical management*
- XI. Guidelines for chemical management*
- XII. Chemical Hazard Communication tools [eg.videos]*

8. Conclusion

Synergies are possible in the areas of improvement of infrastructure for chemical & HW management, analysis & monitoring of chemicals & HW, awareness creation on chemicals & HW management, interministerial information exchange for chemicals & HW management, interministerial coordination for chemicals & HW management. These activities require significant resources.

And also the synergies are possible in the areas of trainings in the field of chemicals & HW management, preparation of guidelines/rules for transportation of chemicals & HW, financial resources mobilization for chemicals & HW management, production of visual aids e.g. Videos. These activities require fewer resources comparatively.

In the country context, Sri Lanka faces several obstacles that interferes the synergy approaches. This includes: lack of awareness, fragmented approaches & short sighted political objectives, competition for funds at national & international level, absence of proper legislations & regulations/plans, weaknesses of policy development etc.

Being a developing country Sri Lanka should consider the synergy actions for management chemicals & HW. It will have various benefits over fragmented approaches. Expenditure reduction, minimization of overlapping/duplication, multi-stakeholder participation, information sharing and coordination, national integration are among benefits.

9. Acknowledgement

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